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Application Information

Bulletin No. 16S

Typical Wiring Diagram When Using a Cummins Digital 3081313 Controller, a DYN2 80111 Series Digital ILS Control or a Cummins 3058500 Digital ILS Control, & a DYN2 90200 Auto Synchronizer

DYNA II AUTO-SYNCHRONIZER

The DYNA II Auto-Synchronizer (P/N DYN2 90200) can be used with the Cummins Digital governor and DYNA II Digital Isochronous Load Sharing Control to automatically synchronize one generator with another or with a bus. The Auto-Synchronizer eliminates the risk of operator error inherent with manual synchronizing.

Figure 1 illustrates the wiring of two engine generator sets having Cummins Digital governors, DYNA II Digital Isochronous Load Sharing Controls and DYNA II Auto Synchronizers. Additional engine generator sets can be paralleled by wiring them at the point designated, PARALLELING LINES TO OTHER SYSTEMS.

— CAUTION —

It is recommended that an independent overspeed device be incorporated in every engine control system.

NOTES

1. If more than one engine is started using the same battery supply, use separate battery supply for each governor system. Twist power leads and use shielded leads as shown.
2. Select current transformers to provide 2.5 to 5.0 amps at full rated load. Current transformers require nominal 0.32 VA / PHASE at 2.5 amps; 1.25 VA / PHASE at 5.0 amps.
3. Observe current transformer polarity markings when connecting.
4. Power switch current rating: 10 amps.
5. Phasing of potential to Terminals 1, 2 and 3 is necessary to keep each signal in its correct phase relationship. If the generator voltage is not the same as the voltage rating on Terminals 1, 2 or 3 of the Isochronous Load Sharing Control, a step-down transformer is required. Correct phasing of the transformer leads is necessary. Step-down transformers require nominal 1 VA / PHASE.
6. Droop / Isochronous switch is not required if units are always operated in the Isochronous mode.
7. If "Load Pulse" function is not being used, the "Load Pulse" Potentiometer must be set fully counterclockwise.

NOTES FOR AUTO-SYNCHRONIZER (Also see F-23448)

8. a. Closing a contact between 12 to 13 allows the Auto-Synchronizer to perform as a speed matching unit.

The speed and phase of the incoming generator are controlled and a contact is closed to drive a circuit breaker. Once the circuit breaker is closed the contact between 12 and 13 should be opened. Another method would be to use the "Output Hold" dip switch, SW1, on the front of the unit.

- b. Open contacts or no jumper between 12 to 13 allows the Auto-Synchronizer to still sense any error, but it does not provide any control or contact closure
9. Phasing of voltage potential to the Auto-Synchronizer is necessary to keep each signal in its correct phase relationship. If the generator voltage is not the same as the voltage rating of the Auto-Synchronizer, step-down transformers are required. The step-down transformers require a nominal 7 VA/PHASE for the Generator input and 2 VA/PHASE for the Bus input
10. Connections to terminals 1-3 or 2-3 and 4-6 or 5-6 of the Auto Synchronizer must be the same voltage potential. Applying generator voltage without applying bus voltage may cause the engine to run faster or slower than the desired speed. However, when bus voltage is applied, the Auto-Synchronizer will change engine speed to quickly match the generator to the bus frequency.
11. Step-down transformers require nominal 10 VA/PHASE.
12. The digital controller has a built in 6 second ramp, which is automatically enabled when the Idle mode is switched to Run.

For 230 VAC operation use terminals 4 & 6 for GEN, 1 & 3 for BUS.

For 115 VAC operation use terminals 5 & 6 for GEN, 2 & 3 for BUS.

CONTROLLER SPEED ADJUSTMENT

1. Set the remote speed potentiometer to mid position.
2. Set Run 1 and Run 2 in the digital controller at 64 Hz for a 60 Hz system. (54 Hz for a 50 Hz system).
3. Set the digital controller to the Run mode and adjust the desired speed with the remote speed potentiometer.

* Shielded Cable — should be purchased from Barber-Colman or customer should purchase a cable with a wrapped mylar supported aluminum foil shield with a drain wire.

Typical Wiring Diagram when using a Cummins Digital 3081313 Controller, a DYN2 80111 Series Digital ILS Control or a Cummins 3058500 Digital ILS Control, and a DYN2 90200 Auto Synchroniz.

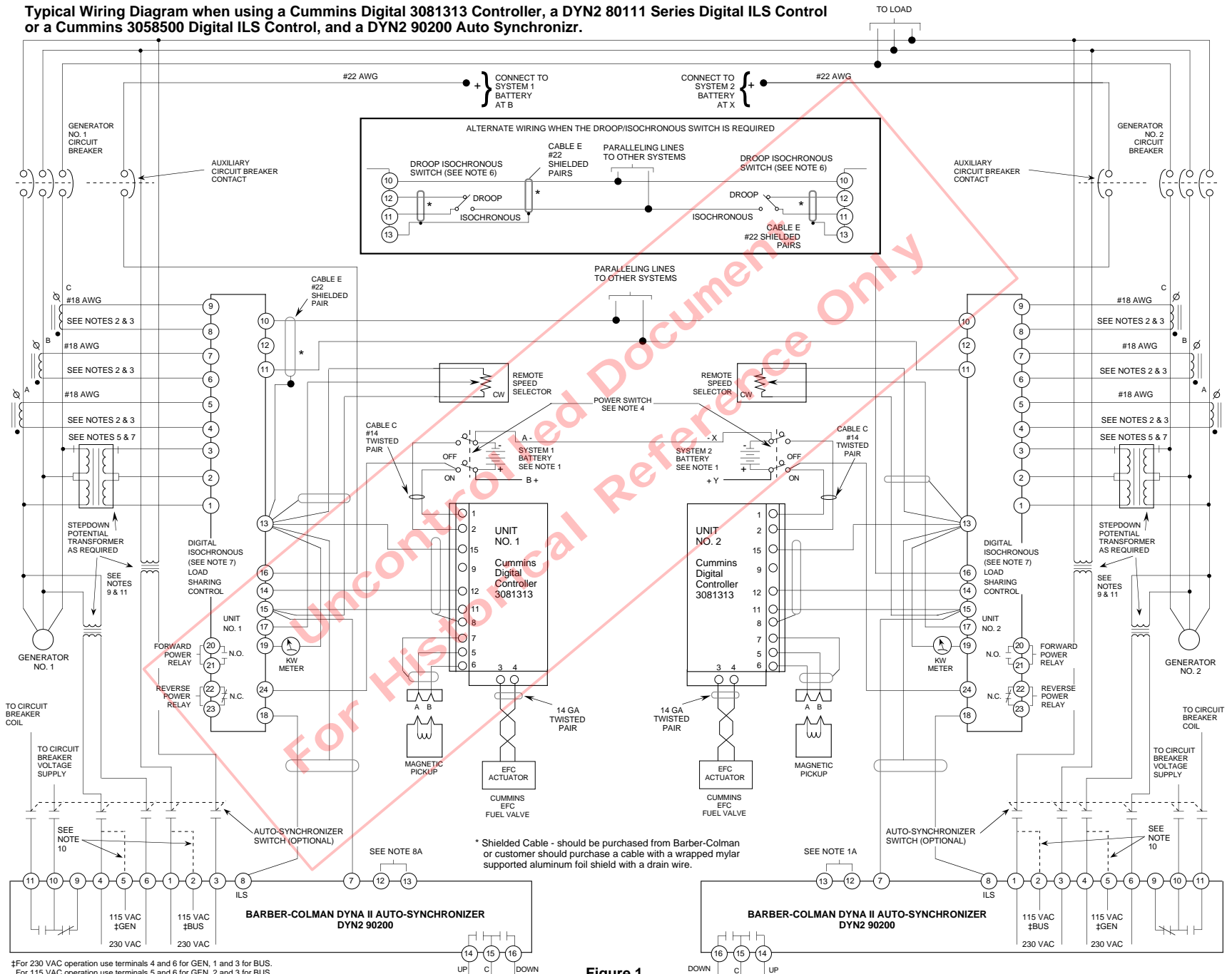


Figure 1

Typical Wiring Diagram When Using a Cummins Digital 3081313 Controller, a DYN2 80104 Series Analog ILS Control or a Cummins 3023534 Analog ILS Control, & a DYN2 90200 Auto-Synchronizer

DYNA II Auto-Synchronizer

The DYNA II Auto Synchronizer (P/N DYN2-90200) can be used with the Cummins Digital governor and DYNA II Isochronous Load Sharing Control to automatically synchronize one generator with another or with a bus. The Auto-Synchronizer eliminates the risk of operator error inherent with manual synchronizing.

Figure 2 illustrates the wiring of two engine generator sets having Cummins Digital governors, DYNA II Isochronous Load Sharing Controls and DYNA II Auto-Synchronizers. Additional engine generator sets can be paralleled by wiring them at the point designated **PARALLELING LINES TO OTHER SYSTEMS**.

— Caution —

It is recommended that an independent overspeed device be incorporated in every engine control system.

NOTES FOR AUTO-SYNCHRONIZER

(Also see F-23448)

1. a) Closing a contact between 12 to 13 allows the Auto-Synchronizer to perform as a speed matching unit. The speed and phase of the incoming generator are controlled and a contact is closed to drive a circuit breaker. Once the circuit breaker is closed, the contact between 12 and 13 should be opened. Another method would be to use the "Output Hold" dip switch, SW1, on the front of the unit.
b) Open contacts or no jumper between 12 and 13 allows the Auto-Synchronizer to still sense any error, but it does not provide any control or contact closure.
2. Phasing of voltage potential to the Auto-Synchronizer is necessary to keep each signal in its correct phase relationship. If the generator voltage is not the same as the voltage rating of the Auto-Synchronizer, step-down transformers are required. The step-down transformers require a nominal 7 VA/PHASE for the Generator input and 2 VA/PHASE for the Bus input.
3. Connections to terminals 1 - 3 or 2 - 3 and 4 - 6 or 5 - 6 of the Auto-Synchronizer must be the same voltage potential. Applying generator voltage without applying bus voltage may cause the engine to run faster or slower than the desired speed. However, when bus voltage is applied, the Auto-Synchronizer will change engine speed to quickly match the generator to the bus frequency.

GENERAL SYSTEM NOTES

4. Power switch current rating: 10 amps.
5. If more than one engine is started using the same battery supply, use a separate battery supply for each governor system.
6. If each generator has a separate power supply, connect the negative of all power supplies together for a common reference.
7. Use shielded and twisted leads as shown.

NOTES FOR ISOCHRONOUS LOAD SHARING MODULE (Also see F-16892)

8. Select the ILS current transformers to provide 2.5 to 5.0 amperes at full rated load. Current transformers require nominal 12.5 VA/PHASE at 5.0 amperes
9. Step-down potential transformers require a nominal 6 VA/PHASE for the ILS.
10. Observe current and potential transformer markings when wiring system because it is necessary to keep each signal in its correct phase relationship to each other.
11. If the "load pulse" function is not being used, set the "load pulse" potentiometer fully counterclockwise.
12. Droop/Isochronous switch is not required if the system is always operated in the isochronous mode.
13. The digital controller has a built in 6 second ramp, which is automatically enabled when the Idle mode is switched to Run. Do not use the ramp built in the analog ILS.

CONTROLLER SPEED ADJUSTMENT

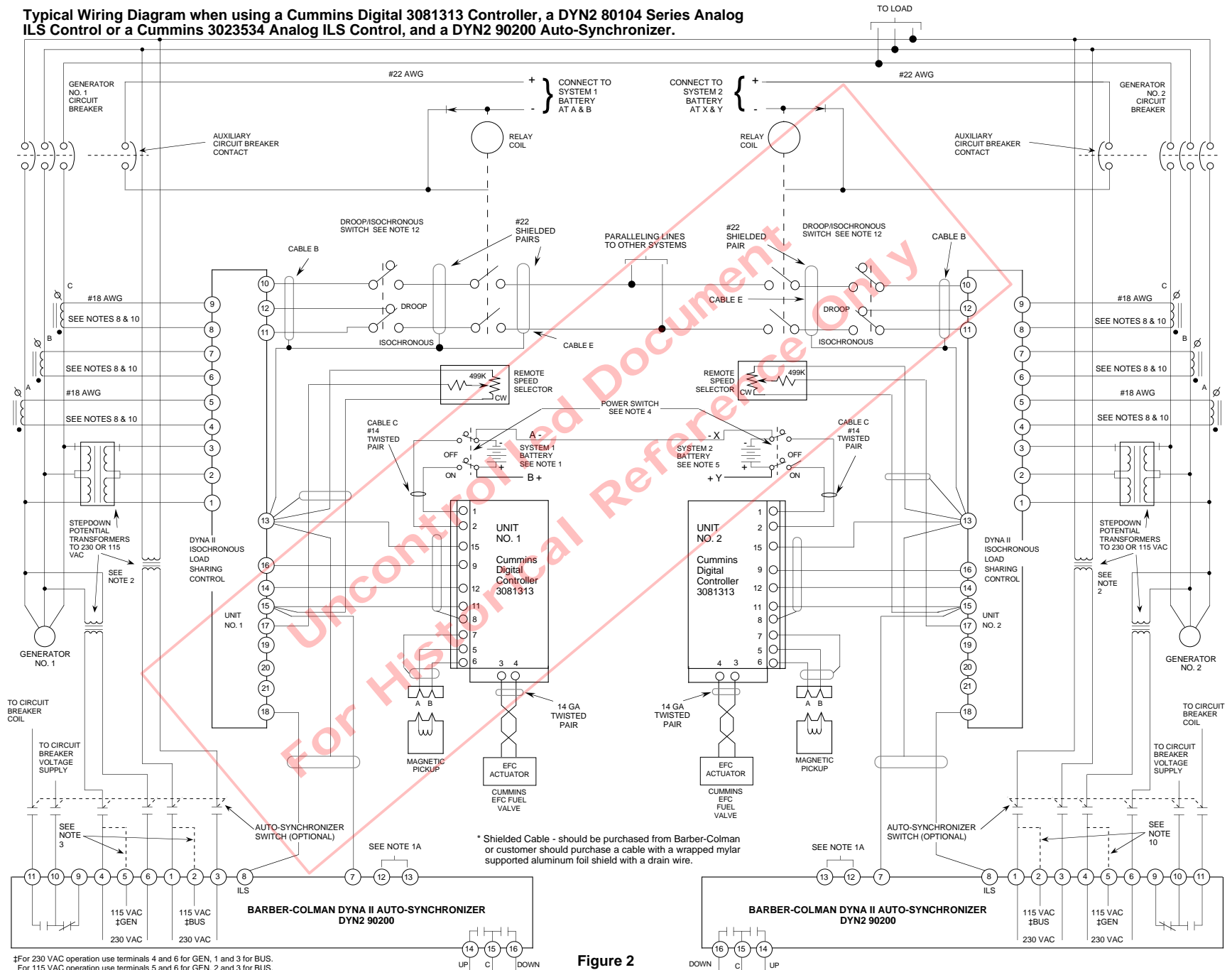
1. Set the remote speed potentiometer to mid position.
2. Set Run 1 and Run 2 in the digital controller at 64 Hz for a 60 Hz system. (54 Hz for a 50 Hz system).
3. Set the digital controller to the Run mode and adjust the desired speed with the remote speed potentiometer.

* Shielded Cable — should be purchased from Barber-Colman or customer should purchase a cable with a wrapped mylar supported aluminum foil shield with a drain wire.

For 230 VAC operation use terminals 4 & 6 for GEN, 1 & 3 for BUS.

For 115 VAC operation use terminals 5 & 6 for GEN, 2 & 3 for BUS.

Typical Wiring Diagram when using a Cummins Digital 3081313 Controller, a DYN2 80104 Series Analog ILS Control or a Cummins 3023534 Analog ILS Control, and a DYN2 90200 Auto-Synchronizer.



†For 230 VAC operation use terminals 4 and 6 for GEN, 1 and 3 for BUS.
For 115 VAC operation use terminals 5 and 6 for GEN, 2 and 3 for BUS.

Figure 2

NOTE

Barber-Colman believes that all information provided herein is correct and reliable and reserves the right to update at any time. Barber-Colman does not assume any responsibility for its use unless otherwise expressly undertaken.

CAUTION

As a safety measure, the engine should be equipped with an independent overspeed shutdown device in the event of failure which may render the governor inoperative.

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